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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 832,116	04/11/2001	Manabu Takayama	862.C'2202	1587

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EXAMINER

YAM, STEPHEN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 04/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/832,116

Applicant(s)

TAKAYAMA ET AL.

Examiner

Stephen Yam

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_

### DETAILED ACTION

This action is in response to Amendments and remarks filed on January 23, 2003. Claims 12-16 are currently pending.

#### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 12, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher US Patent No. 3,598,493 in view of Abe US Patent No. 4,780,610.

Regarding Claim 12, Fisher teaches (see Fig. 9) an optical scale having a reflecting portion (143) for reflecting light emitted from a light-emitting portion (142) of a sensor (142, 149) having the light-emitting portion and a light-receiving portion (149) and returning the light to the light-receiving portion, wherein a shaft holding portion (150) (see Col. 10, lines 36-39) of the optical scale which holds a shaft for rotating said optical scale and the reflecting portion are constructed using transparent material (see Col. 4, lines 18-19), said reflecting portion constructed so as to reflect (22) (see Fig. 1) an incident light ray (13) by internal total reflection (see Fig. 1). Fisher does not teach the shaft holding portion and the reflecting portion as integrally molded in a mold wherein the material is resin, or the reflecting portion molded by molding portions arranged on a single surface side of the mold. Abe teaches an optical scale having (see Fig. 1 and 2) a reflecting portion (31) for reflecting light emitted from a light-emitting portion of a sensor (21) having the light-emitting portion and a light-receiving portion

and returning the light to the light-receiving portion (see Col. 8, line 66 to Col. 9, line 4), wherein a shaft holding portion (center of code plate (D)) of the optical scale which holds a shaft (33) for rotating the optical scale and the reflecting portion are integrally molded in a mold by using a resin material (see Col. 7, lines 44-45 and Col. 8, lines 1-3 and 15-17), and said shaft holding portion and said reflecting portion are molded by molding portions arranged on a single surface (D) of the mold. It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrally mold the shaft holding portion and reflecting portion using resin and mold the reflecting portion on a single surface side of the mold in the optical scale of Fisher, to improve the durability and stability of the optical scale while providing an efficient manufacturing process.

Regarding Claims 15 and 16, Fisher in view of Abe teach the optical scale as taught in Claim 12, according to the appropriate paragraph above. Fisher does not teach a bearing or bearing inner ring portion for rotatably supporting said optical scale or a holding member for holding the bearing and the sensor, or the optical scale used in an optical encoder. It is well known in the art to use an optical scale in an optical encoder, to provide positional and rotational distance measurement. Regarding Claim 15, Abe teaches (see Fig. 2) the shaft holding portion coupled to a bearing (34) inner ring portion for rotatably holding the optical scale. Regarding Claim 16, Abe teaches (see Fig. 1 and 2) an optical encoder using the optical scale with a bearing (34) for rotatably supporting said optical scale and a holding member (35) for holding said bearing and the sensor. It would have been obvious to one of ordinary skill in the art at the time the invention was made to included a bearing/bearing-inner-ring-portion and a holding member as taught by Abe in the optical scale of Fisher in view of Abe and use said optical scale in an

Art Unit: 2878

optical encoder, to reinforce the shaft to minimize vibration and to provide accurate measurements of rotational speed and position.

3. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher in view of Abe as applied to Claim 12, further in view of Nomura et al. US Patent No. 6,055,111.

Fisher in view of Abe teach the optical scale as taught in Claim 12, according to the appropriate paragraph above. Fisher and Abe do not teach the shaft holding portion having a closed-end concave portion or a convex portion fitted on the shaft or a gate for injecting the resin material during molding disposed in the closed-end concave portion or convex portion. It is design choice as to the curvature of the shaft holding portion, depending on the desired configuration. Nomura et al. teach (see Fig. 4) an optical element (30) molded from resin (see Col. 4, lines 38-47) with a gate (50) for injecting the resin material during molding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a closed-end concave or a convex portion for the shaft holding portion and to use a gate for injecting the resin material as taught by Nomura et al. in the optical scale of Fisher in view of Abe, to structure the outline of the optical scale as desired and form the entire scale using injection molding in a common, well-known, cost-effective molding process.

#### ***Response to Arguments***

4. Applicant's arguments with respect to claims 12-16 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Art Unit: 2878

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (703)306-3441. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703)308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7724 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

SY

SY  
April 7, 2003

  
DAVID PORTA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800